

that the smaller particles were mitochondria and argued that those in what he called the “large granule fraction,” which corresponded to Bensley’s particles, were secretory. Claude’s analysis of the chemical make up of the smaller and larger particles indicated only minor differences (for example, both seemed to contain phospholipids, although the smaller particles contained about twice the percentage, and contained ribose nucleic acids, iron, and copper). Claude tentatively adopted a proposal put forward by Noel in 1923 that the large particles have their “origin in a progressive transformation of the smaller elements, or mitochondria” (p. 269).

In the discussion following the paper, Jack Schultz raised the possible relevance of another constituent of the cell proposed in the era of light microscopy, the ergastoplasm. As we will see, Schultz had collaborated with Caspersson at the Karolinska Institute in the 1930s, where they had proposed and advanced evidence that RNA played a role in protein synthesis. In a very few years, most researchers would view the small particles, ergastoplasm, and RNA as interrelated, but Claude held instead that the ergastoplasm did not exist: “In recent years, the majority of workers have come to consider the ergastoplasm as an artefact produced, as a rule by fixatives containing strong acids. It is rare to find well preserved mitochondria and ergastoplasm simultaneously in the same preparation and the suggestion has been made that the ergastoplasm was merely poorly fixed mitochondria” (p. 270). In support of this position, he cited a review by Bowen (1929).

In the period that followed, however, Claude came to recognize that his small particles were too small to be mitochondria, which themselves were large enough to be visible in the light microscope. He also tried traditional stains on the particles in the small fraction and discovered they stained differently than mitochondria. As a result, he radically altered his interpretation, construing the small particles now as a newly discovered cell constituent:

the evidence, so far, indicates that the mass of the small particles does not derive from the grossly visible elements of the cell but constitutes a hitherto unrecognized particulate component of protoplasm, more or less evenly distributed in the fundamental substance and which imparts to it, in well-preserved preparations, its staining properties. In order to differentiate the small particles from the other, already identified elements of the cell, it may be convenient in the future to refer to this new component under a descriptive name which would be specific. For this purpose the term *microsome* appears to be the most appropriate. (Claude, 1943b, p. 453)

Claude now needed to place mitochondria elsewhere, so he reinterpreted his “large granule” fraction as most likely an impure mixture that included